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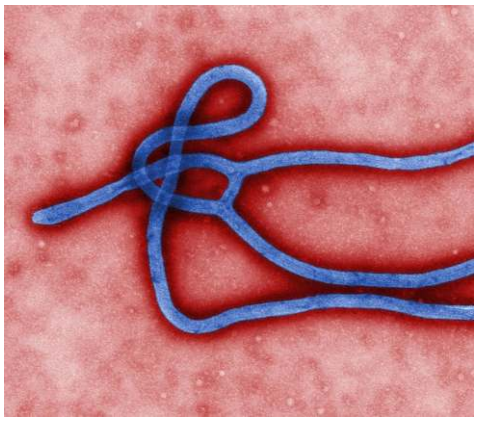
Policy Debate | International Responses to Global Epidemics: Ebola and Beyond

Monica Rull, Ilona Kickbusch and Helen Lauer

Initial Contribution | The Ebola Wake-Up Call: The System's Failings in Responding to Outbreaks[1] by Monica Rull



1 Ebola is an extreme example of the collective failure to identify, respond to and control an epidemic. Lessons 'learned' from the Ebola response are not new. Evaluations of responses to previous epidemics have already exposed the weaknesses of current policies and practices, showing how the world is unprepared to effectively address rare or emerging diseases

2 The Ebola outbreak in West Africa has been—in fact—a wake-up call, showing that we are not ready to respond to large-scale epidemics, mostly because the foundations for such a response are weak. If local and national outbreaks[2] of diseases such as malaria, measles or cholera—which are well-known, preventable and treatable—are yet to be properly identified and responded to, how can we expect transnational outbreaks of emerging and rare diseases to be addressed properly?

3 High mortality characterises epidemics. The risk of dying from malaria is five to ten times higher during an epidemic than in situations where transmission rates are stable (Kiszewski and Teklehaimanot, 2004). According to World Health Organization (WHO) estimates the case fatality rate (CFR) for measles in low-income countries ranges from 0.05 to 6 per cent, but can reach 30 per cent in certain situations, with higher measles CFRs reached during outbreaks (Wolfson et al., 2009). In Africa alone, an estimated 12.4 million cases of malaria are related to epidemics, which represents 4 per cent of all total cases of malaria reported worldwide. However, the number of deaths attributable to malaria epidemics in Africa may be as high as 155,000-310,000 per year, accounting for one in four malaria deaths worldwide (Worrall et al., 2004). The number of deaths at the community level linked to epidemics can be up to ten times higher than that of deaths reported by health structures, surpassing the emergency threshold (N'Goran et al., 2013).

4 But not all epidemics are equal, nor are they addressed in the same way. The national and international threat posed by a 'level four' biosecurity pathogen such as Ebola is simply not comparable with that posed by measles and other outbreaks of infectious diseases. The latter are not seen as a cause for international concern, yet they still claim hundreds of thousands of lives every year and the majority go unnoticed and raise little concern outside directly affected populations.

5 This article looks at the following difficulties encountered in ensuring a timely identification and response to all epidemics—

1. Insufficient monitoring
2. The global security approach oversight
3. Delays in the identification of epidemics: weak surveillance system and alert mechanisms
4. Delays in declarations of epidemics: a political decision
5. Failing to respond: (a) tension between prevention and emergency response; (b) practical and political constraints; (c) lacking the tools—the failure of the research and development framework

6 From weak surveillance systems and politically centred decisions, to poor access to healthcare for the general population and limited response capacity from the health system, all these elements add to the current situation in which epidemics without the potential to be points of international concern are not properly addressed. This situation is unacceptable not only for the populations directly affected but also for the global community, increasing the risk of large-scale/transnational epidemics.

1. Epidemic Diseases: The Unquantified Threat

7 Epidemic-prone diseases remain a serious public threat worldwide, and in low-income countries in particular. Poverty, high population density and poor access to clean water and sanitation, coupled with weak vector control and limited access to healthcare, contribute to the re-emergence of previously controlled diseases such as measles, malaria and cholera. In 2013, nearly nine million deaths were estimated to be attributable to communicable diseases (The Lancet, 2015), the majority of them in low-income countries and tropical areas.

8 It is not easy to know how many outbreaks are ongoing at a given moment, or to estimate the real scale of the problem. While there are several public sources of information, there is no one validated and real-time global database available to consult. The WHO's Global Alert and Response (GAR)—which monitors outbreaks, supports countries in outbreak investigation and reports events worldwide—has limited scope.[3] In addition to the difficulties in obtaining real-time information, annual reports are not exhaustive. In 2014, only three African countries reported measles outbreaks (WHO, 2015a), not including South Sudan where MSF and other organisations responded to measles outbreaks in several camps for internally displaced people, or Uganda where authorities declared a measles outbreak in the Arua area affecting the local population and South Sudanese refugees (UNHCR, 2014. Nor did the WHO report include the largest visceral leishmaniasis[4] epidemic in South Sudan since 1999. From the information available publicly, and from MSF's field experience, one can conclude that the majority of small and some medium-sized outbreaks (with or without adequate response) are most likely not reported, making it difficult to quantify the real extent of the problem.

9 Every year scores of outbreaks, both small and large, affect all regions of the world. The majority do not have pandemic potential and therefore receive little attention from the media. With several emergencies fighting for attention, it is no surprise that 'another' measles outbreak in Katanga, Democratic Republic of Congo (DRC), or 'another' cholera outbreak in Juba, South Sudan, fails to make headlines or to mobilise the international community to support the affected population.

2. The Security/Trade Perspective: An Unwise and Narrow Approach

10 An international framework exists to safeguard the timely identification of and response to acute public health risks; it is made up of what are known as the International Health Regulations (IHR), which are binding for all member countries of the World Health Organization (WHO). The purpose and scope are 'to prevent, protect against, control and provide a public health response to the international spread of disease in ways that are commensurate with and restricted to public health risks, and

which avoid unnecessary interference with international traffic and trade' (WHO, 2006). They require countries to report to the WHO those disease outbreaks and public health events that have the potential to cross borders and threaten people worldwide.

11 Although the World Health Assembly (WHA) endorsed the IHR in their second iteration in 2005,[5] and they came into force in 2007, by 2013 only 20 per cent of the WHO's member countries had achieved compliance with the core capacities outlined in the regulations (WHO, 2013). One of the building blocks of the IHR is to strengthen national disease prevention, surveillance, and control and response systems. Some countries still have a long way to go before a reliable, nationwide alert and response system is in place. This lack of compliance, together with limited access to healthcare for significant parts of the population, further increases the probability that outbreaks will continue to occur without being noticed.

12 The IHR's success relies on states achieving compliance with these core capacities. This entails all acute public health risks being identified at a country level, even if only those that will actually have an impact internationally are reported to the WHO. Failing to ensure a national response has a domino effect that ultimately causes a global effect.

13 Several initiatives have been launched by high-income countries aiming to support the implementation of the IHR. These include the Global Health Security Initiative (GHSI), launched in 2001. The Ottawa plan for improving health security, agreed in November 2001, includes the aim 'to further support the World Health Organization's disease surveillance network and WHO efforts to develop a coordinated strategy for disease outbreak containment' (GHSI, 2001). This implies improving the capacity of states other than those that are members of the GHSI to respond to national outbreaks. However, 14 years after its creation and the beginning of its support for the WHO and IHR implementation, the progress made in achieving results that benefit people in developing countries is questionable.

14 In the name of global health security, developed countries made commitments to create better access to vaccines and rapid diagnostic tests targeting pathogens that could eventually be used as biological weapons, such as smallpox or flu. However, one cannot overlook the fact that the primary objective for such commitments was actually to protect their own citizens. They were focused on protecting their countries from the 'threat of international biological, chemical and radio-nuclear terrorism' (GHSI, 2015), rather than on ensuring that populations in low-income countries would benefit from a better response to epidemics.

15 Investment in research and development (R&D) of new vaccines or rapid diagnostic tests for neglected diseases is still painfully absent. Diseases low on the security agenda are not prioritised, while current R&D policies are not conducive to bringing to the market vaccines or treatments for diseases such as Ebola, which—prior to 2014—only affected a few hundred people in remote areas of Africa.

16 The West Africa outbreak of 2014, with 27,952 cases and 11,284 deaths (WHO. 2015c), has been a wake-up call for many: obscure diseases that have so far only affected isolated and rural populations in Africa can cross international borders. A reluctance to invest in identifying local outbreaks and in developing better diagnostics and treatments for neglected tropical diseases (NTDs) today may lead to a threat to us all tomorrow.

17 Ebola highlighted some of the well-known deficiencies of the national and international response to epidemics. Responses to the needs of those populations affected by outbreaks—even those outbreaks that apparently do not pose an international threat—need to be prioritised. As expressed by Joanne Liu, MSF International President, at the 68th World Health Assembly:

18 'Emergency response reform is about treating people, not just global health security or strengthening health systems. Member states with the means to respond to deadly disease outbreaks in other countries cannot act only in their national self -interests, closing their borders and hoping it will burn out. They must quickly deploy resources to combat the disease at its source, to save lives and prevent further spread. Communities infected with a highly contagious virus are not biohazards. They are patients with families' (MSF, 2015).

3. Failure to Identify Epidemics: Weak Surveillance Systems and an Absence of Functional Alert Mechanisms

19 The difficulties of declaring an outbreak can usually be linked to weak surveillance systems and the absence of alert mechanisms in the affected countries. Detecting transmission in remote areas at a community level is not an easy task. Even when heavy investment and intense surveillance are in place—as is the case for polio—cases of undetected transmission occurring during one year or more have been demonstrated (WHO, 2007).

20 MSF's own experience has shown that even an emergency organisation can fail to detect outbreaks if not enough attention is paid. This has occurred, for example, in the DRC's Orientale province, where malaria transmission remains intense. Expected seasonal variations with cases occurring in hard-to-reach areas make it difficult to have a proper early warning system. In 2012, for example, a malaria outbreak was detected by MSF after it had peaked. Despite official data from the Ministry of Health showing increasing numbers of cases and deaths from malaria, it was the local population that alerted MSF teams to abnormally high numbers of children with fever dying (Koscalova and Iscla, 2014). The late identification of an outbreak, especially when followed by a slow response, further endangers people's lives and well-being. Unfortunately, the countries with weaker surveillance systems are usually those where the gap is largest between preparedness and response plans on paper and how these elements are put into practice.

21 Surveillance systems are usually based on health facility information. Transmission can be ongoing in the population for some time before the alert is raised. Despite the international support given to governments to help them strengthen their health systems, there is still a long way to go. In the majority of the countries where MSF works, the health system is inaccessible for a significant proportion of the population, often due to distance, financial barriers or lack of trained health-care staff. As a result, cases are not reported to the health facilities.

22 In the majority of cases where epidemics are confined to isolated areas or small pockets of the population, Ministries of Health can expect little external support. Substantial support with significant means (not only funding, but also logistics and qualified human resources for hands-on work) from the aid system is generally activated for emergency response only when the epidemic is large, affects several countries or is

perceived as out of control. The majority of epidemics will never capture the public's attention, nor will they qualify as a Public Health Event of International Concern (PHEIC), triggering the aid system to intervene in full force. Consequently the response will be led by the Ministry of Health of the affected country, with responsibility usually decentralised to the local or regional level, and with the practical implementation of the response supported by no more than a few actors.

4. Delays in Declaring an Epidemic: Politics and Policies

4.1 Politics: The Lack of Incentives to Declare Epidemics

23 The actual declaration of an epidemic can be politically and economically sensitive, impacting on international trade (as with cholera in rice-exporting nations) or on sectors such as tourism. There may even be a refusal to acknowledge certain diseases, for example declaring a cholera outbreak as acute watery diarrhoea.[6] This may not pose a problem if the response is deployed appropriately, but it nevertheless reflects the sensitivity of the topic and can have negative repercussions with regards to which outbreak control measures are put in place.[7]

24 Ebola is a good example of such a combined effect. The potential economic repercussions of declaring an Ebola outbreak in a country, together with the risk of social unrest and loss of trust in health institutions, may have played a role in the refusal of some countries to investigate rumours early or to proactively look for cases in locations where there was no known active transmission.

25 Regional and international dynamics also play an important role. An extreme example is the delay in declaring the 2014 Ebola epidemic in West Africa a PHEIC. In March 2014, two countries—Guinea and Liberia—were reporting confirmed cases and by May 2014, cases had been confirmed in Sierra Leone. One can argue that the internal politics and slow decision making of the WHO played a significant role in the process, but within the IHR there are mechanisms to overcome such a problem giving the Director General full powers to declare a PHEIC (IHR, 2005, article 12.3)

26 Retrospectively it is interesting to analyse the timing. It was not until cases arrived in the US or Europe, therefore threatening GHSI member states, that the WHO Director General declared Ebola a PHEIC on 8 August 2014, eight months after the first cases were confirmed in Guinea and with confirmed intense transmission ongoing in two other countries for months. Shortly after, the UN Security Council declared the Ebola outbreak in West Africa a threat to peace and security, following the first meeting in its history to address a public health crisis.

27 By May 2014 three countries had reported cases in the first transnational Ebola outbreak. That should have triggered a PHEIC declaration at least three months earlier than was actually the case.

28 There are no clear incentives for countries to identify and declare epidemics. Already struggling to respond to the long-term needs of their population, and with the risk of facing trade limitations or damaging the tourist sector, it should not come as a surprise that the authorities of affected countries are not eager to declare an epidemic—which will further stretch their limited capacity and potentially set their economy back—if there is no reward for doing so.

4.2 The Conflict between Prevention and Response to an Epidemic: The Role of Current Policies

29 Vaccine-preventable diseases are the best example of the conflict between prevention and response to an epidemic. Since the WHO launched the Expanded Programme on Immunization (EPI) in 1974, the use of vaccination as a public health intervention has been considered one of the most cost-effective ways of reducing child morbidity and mortality. Global health actors including donors and governments have invested heavily in prevention as the main tool to fight vaccine-preventable diseases. The global effort includes internationally-backed initiatives such as Gavi, the vaccine alliance; the Measles and Rubella Initiative (MRI), the Global Polio Eradication Initiative (GPEI), the International Finance Facility for Immunization (IFFIm) or the Pneumo Advance Market Commitment (AMC). The total expenditure on routine immunisation from 2006 to 2013 was around USD 22 billion (WHO, 2015d). The government-funded contribution to overall expenditure on routine immunisation is variable by region and individual country, with 20 countries entirely dependent on international support in 2006 (Lydon et al., 2008).

30 Prioritising prevention has produced some laudable achievements and has had a substantial impact. There has been an impressive amount of progress made over recent decades towards better vaccination coverage through the EPI, thereby decreasing the total number of cases, related deaths and the likelihood of epidemics. However, these initiatives have only a limited ability to respond to emergencies, and mechanisms for requesting funds for responses to epidemics beyond supplementary immunisation activities (SIAs), which are usually scheduled and agreed in advance, are cumbersome. In 2013, for example, the MRI's total budget was more than USD 240 million, yet only USD 5 million of this was dedicated to responding to epidemics (MRI, 2014).

31 The success of national EPIs is quantified using DPT3 (diphtheria-tetanus-pertussis vaccine) coverage. DPT3 coverage in the first 12 months of a child's life in Africa increased from 5 per cent in 1980 to 75 per cent in 2013, but this improvement has slowed in the past two years (WHO, 2015a). Vaccination coverage by country is patchy, with some countries better off than others. Even within a country, vaccination coverage may vary between districts, with hard-to-reach populations having the lowest coverage rates. There are still large unimmunised birth cohorts in low- and middle-income countries (MICs), and recently even in high-income countries (HICs) due to a different problematic: anti-vaccine campaigns. The competing priorities for health systems, alongside the existence of sizeable 'invisible communities',[8] mean vaccination coverage can be far from optimal, increasing the risk of epidemics.

32 Official immunisation coverage figures can be up to double those returned by actual surveys. In 2011 in Chad, the official estimation of DPT3 coverage was 70 per cent, yet a vaccination coverage survey showed that only 42 per cent of children had been vaccinated (UNICEF, 2014). This may be explained partially by the Chad Ministry of Health reporting coverage based on obsolete population figures. When the theoretical coverage is good, there may be little interest in looking beyond the reported figures. In countries with weak vaccination coverage, this should lead to intensified efforts to improve the EPI and the preparedness and response capacity in case an epidemic breaks out.

33 Epidemics are often viewed as some sort of failure for governments and their international partners. The true failure is that decision- and policymakers refrain from taking ownership and acknowledging the potential shortfalls of national programmes. A measles outbreak, for example, may imply disappointing results from the EPI due to suboptimal coverage or low vaccine effectiveness, so its existence is therefore denied. Poor EPI performance translates into loss of support from donors; Gavi's performance payment, for example, is based on improvements in immunisation outcomes, with up to USD 30 per additional child immunised paid out if DPT3/measles coverage improves compared with the previous year or the baseline (GAVI, 2014). As they risk losing a much-needed cash injection, it is not surprising that countries are not open to declaring outbreaks of vaccine-preventable diseases that may expose the failures of their national programmes or raise doubts about the indicators reported.

34 Currently, the majority of developing countries are facing a double burden of disease. In addition to the heavy toll that infectious diseases inflict on the population, the complications of non-communicable diseases (NCDs) and injuries are further straining their health systems. Limited resources sometimes mean that decisions are made to reduce emergency capacity so as to safeguard resources for achieving long-term goals. This may come with a dangerous price: lower capacity for epidemic response. While the need to invest in long-term goals and prevention is unquestionable, we still need to ensure that building for the future does not imply accepting collateral damage in the form of victims of epidemics that go ignored today. Resilient health systems and communities are the end goal. But epidemics are like fires, and even if progress is being made on fireproofing a house, it is unwise to leave a room in flames.

35 Helping states to better respond should not mean they cede their responsibility to private sector actors or international agencies. The dominant role played by private sector actors in setting the global health agenda is worrying, especially when one considers that governments are directly or indirectly allowing this privatisation of aid as an alternative to further investing themselves. When the WHO and other global health actors receive up to 60 per cent of their funds from private donors, it raises the risk that they will be influenced by private agendas, and their resources will be directed towards concrete programmes that do not necessarily help those most at risk.

5. Failing to Respond to Outbreaks: Lack of Capacity and Tools, and Practical Constrains

5.1 Ill-Equipped and Unwilling

36 Identifying and declaring an outbreak is only the first step on the path to controlling it. Adapting the response to the specific stage of the outbreak for maximum impact may be impossible without reliable data to build up an epidemic curve, while calculating attack rates may be impossible due to poor surveillance and a lack of reliable population figures. In addition, with some epidemics, reliable and rapid diagnostic methods and effective treatment for the disease do not yet exist.

37 Significant delays in response in humanitarian contexts by governmental authorities are often underpinned by a lack of emergency preparation, contingency planning and funds to implement such a response. From MSF's experience in the field and from discussions with other partners, there is one common claim of why UN, government,

and non-governmental actors are late—funds are insufficient, late or misused. Of the actors willing to respond to emergencies, almost all point to an absence of timely funding for intervening or scaling up a response.

38 Beyond the cry for money, political decisions play a major role in the ability of organisations and governments to launch a response to an epidemic. Multi-mandate agencies with long-term development goals, that at the same time claim to be very active in emergency response, are in a difficult position. Their response to epidemics is usually linked to specific appeals, and the essential human resources or technical expertise for responding to an epidemic are limited, therefore curbing their ability to respond directly to an epidemic. Furthermore, long-term partners of Ministries of Health engaged in capacity building and health system strengthening usually favour good relationships with the authorities and remain silent as long as the situation is not totally out of control.

39 The WHO has not been exempt from these tensions. Criticisms have been made of its lack of investment in emergency response and of its organisational culture, including its internal politics, which impede swift action. Several evaluations and reviews of the 2014 Ebola response mention the WHO's inadequate reaction, while some even recommend that the scope of the WHO's work needs to be redirected to its core competencies in order to ensure an appropriate response to epidemics (Carafano et al., 2015). The independent panel mandated to review the Ebola response highlights that 'for the WHO to be fit for emergency response, the organization needs the political will and resources of its member states' (WHO, 2015b). There seems to be a consensus that the political will of the member states and a change in organisational culture are indispensable elements to guaranteeing an appropriate emergency response.

40 MSF is one of the world's firefighters; it is geared for this and acknowledges that not all organisations have the financial independence to act in this way. However, response to epidemics should be taken into account in any long-term programme, and sufficient resources should be allocated for them. When an epidemic strikes, only a very limited number of actors are ready to set up case management centres. One recent example is the 2014 measles outbreak in N'Djamena, Chad. When a measles epidemic was declared, there was no organisation other than MSF capable of or willing to support the Ministry of Health with case management. Vaccination campaigns launched with the support of Ministry of Health's partners (UN agencies, the WHO and international non-governmental organisations) were not fully successful and the outbreak continued to devastate the capital. MSF reinforced public health facilities with extra staff, ensured that medical supplies were available in health centres and treated more than 1,700 measles patients—the majority of them unvaccinated despite an official vaccination campaign coverage rate of 100 per cent (MSF, 2014).

41 The lack of operational capacity in aid organisations is one of the main constraints to mounting an appropriate response to epidemics. In health, the WHO has an advisory role and lacks the capacity in-country to deploy experts for direct case management or the implementation of outbreak control measures, claiming this is not its mandate. This leaves Ministries of Health to 'get on with the job', but unfortunately in a number of countries where epidemics occur these ministries are not in a position to respond properly either. As a result, there is a need for other partners to step up and provide hands-on support in the early days of the emergency, which rarely happens.

42 Because country mechanisms are fixed towards the EPI and SIAs, epidemics are highly sensitive politically. The policies of influential global actors such Gavi or the GPEI reinforce this situation, favouring planned campaigns of eradication or control rather than reactive vaccination campaigns. On several occasions MSF has been forced to postpone mass measles vaccination campaigns in response to outbreaks because 'polio days' or SIAs were scheduled.

43 Delays can also be linked to problems in the importation of vaccines, to diagnostic methods, new treatments or even visas for emergency teams. International aid workers ready to fly in to implement an emergency response can wait days or weeks until permits are ready.[9]

44 Another constraint when responding to vaccine-preventable disease outbreaks is the inability of responders to import vaccines with using the Ministry of Health/UNICEF supply chain. In some countries, such as South Sudan, Myanmar and Kenya, it is impossible to import vaccines into the country, and all immunisation activities need to be authorised by the Ministry of Health. It is understandable that Ministries of Health want to control health activities; however, in areas where the health system is not functional, the inability to import vaccines outside that system further impairs emergency response. If there is an outbreak or alert in an area without functional health facilities, time is wasted gathering all the permits necessary for emergency actors to act, or—in worst-case scenarios—no authorisation is given and there is no reactive vaccination response. Delays can also be caused by hindrances regarding authorisations related to particular antigens, target groups or specific areas.

45 Sometimes, the necessary vaccines are not available in sufficient quantities to cover large target populations, either in-country, in stockpiles or at the supplier level. Recently, an unexpected meningitis C epidemic struck Niger, revealing that the stockpile of meningitis vaccines was heavily underestimated. Meanwhile, a shortage of the oral cholera vaccine stock necessary to respond to worldwide needs exposed its manufacturer's inability to scale up production to respond to increased requirements, a situation that is partially linked to irregular demand (MSF Access Campaign, 2015). When confronted with several requests, the stockpile may not be replenished quickly enough. With insufficient vaccines for the whole population in need, tensions may arise. The political risks—for the authorities—of providing vaccines to only a section of the population can be substantial, and may lead to a decision not to implement a reactive vaccination campaign.

46 The governance of the aid system also has a role to play. In the current system, discordant voices are difficult to hear within the cluster;[10] the overlapping roles of donor, coordinator and implementer make it difficult for some actors to divert from their chosen path. The strategic decision is taken collectively so the responsibility for its failure is traceable to no one (Biquet, 2013). A relatively recent extreme example of this was the notable absence of actors responding at the beginning of the cholera epidemic in Haiti in 2010. There had been a plethora of actors (and funds) to respond to the devastating consequences of the earthquake suffered earlier that year, an event which triggered the implementation of a post-disaster emergency response. However, the only first responders to this new emergency within an emergency were the organisations that had stayed outside the cluster strategy. These were MSF and the Cuban Brigades and between them they treated 80 per cent of all Haitian cholera cases in 2010/11 (Binder, 2013).

47 While Biquet (2013) and Binder (2013) disagree on the condemnation of the entire system based solely on the Haiti example, both agree that—in this particular case—the cluster system played a role in collectively endorsing a strategy that proved not to be the best at addressing the urgent needs of the population facing the epidemic.

5.2 Missing the Tools: Failure of Current Research and Development Policies

48 Ebola exposed the failures of, and presented opportunities with regards to, how our biomedical R&D system delivers solutions for outbreaks and emergencies.

49 In the current research and development (R&D) model, medical needs and resource allocation do not match. Companies developing new products recover their R&D costs by charging high rates protected via patent monopolies. Tropical diseases frequently affect rural, isolated and impoverished populations, thereby attracting limited investment. Diseases like tuberculosis, kala-azar or Ebola get nowhere near the investment in research that diseases with more lucrative markets do. Medical innovation is driven by the health problems of the rich, neglecting the poor.

50 Already in 2006 over 280 scientists wrote to the WHO requesting an alternative framework. The same year, the WHO Commission on Intellectual Property, Innovation and Public Health also proposed that alternative mechanisms should be found to ensure the availability of affordable and technologically appropriated medical tools to respond to the health needs of developing countries.

51 At the request of its member states, the WHO set up a Consultative Expert Working Group on R&D Financing and Coordination in 2010. Over the last 12 months, some progress has been made in certain areas, partly due to the efforts of the WHO.

52 Before the outbreak of Ebola in West Africa, some investments had been made though not necessarily always for target populations in Africa. In addition, lack of prioritization before the epidemic meant that projects often developed at a snail's pace —something that radically changed at the height of the outbreak. Finally, and more in general, little thought has been given to how rapid access to such tools will work in the context of an emergency.

53 Significant challenges have also presented themselves with regards to when to access products for compassionate or emergency use,[11] how to conduct R&D during emergencies, how to coordinate regulatory processes and how best to bank and share bio-samples. Unfortunately many of these issues may apply to, and if so will be critical in, future outbreaks of a range of infectious diseases.

Conclusion

54 Whilst we can anticipate some epidemics in known high-risk zones, and take action to prevent them, there will be cases where a rapid, reactive response will still be required.

55 It is clear that there is no one 'magic bullet' to improve reactivity to epidemics. Many factors have led to a situation in which epidemic response is neglected. These are a consequence of global health priorities, where the overarching policy priority is prevention and health system strengthening. While there have been notable gains, the risk of epidemics has simultaneously heightened. Rapid urbanisation without proper planning, mass population movements, climate change, and crop resistance to pesticides and other available treatments can and will increase the risk of epidemics in

the future. Dengue fever, malaria, chikungunya and viral haemorrhagic fevers are increasingly being reported in unusual geographical locations, and are threatening larger populations, adding to the problem of new and emerging pathogens worldwide.

56 The majority of health systems and communities in low-income countries are far from achieving resilience. Pursuing the goal of resilient populations in the long run should not distract from immediate action, nor should it prevent governments and international actors from supporting those who are willing to launch an emergency response, which they can do by removing blockages and constraints.

57 When there are financial choices to be made, emergency capacity seems to be one of the first elements to be sacrificed by international organisations. Maintaining emergency teams with skilled personnel is costly and difficult to justify when emergencies come and go. However, investing in emergency response should not be questioned in 'good years', otherwise responders will be unprepared when an epidemic hits.

58 Epidemics challenge national capacities, and aid actors (MSF included) should help governments to translate contingency plans into reality. Closing the gap between theory and practical implementation is one of the main challenges for emergency response. Almost all governments have emergency preparedness and contingency plans; however, the holes in those plans only appear when the time comes to implement them. All aspects of a response can be covered on paper, but—in MSF's experience—this does not always translate into patients being treated or activities being fully implemented.

59 Having reached 2015—the date set for achieving the MDGs—a new set of objectives is being agreed upon. The call for the private sector to step in and support the Sustainable Development Goals (SDGs) may be a positive initiative, but only if the goal of ensuring universal access to health remains the main focus. Not taking into account the needs of a population in the context in which they live, and focusing instead on reinforcing health systems, should be avoided. The approach, in terms of preparation, alert and response, needs to be tailored to the local reality. Engaging in new and comprehensive structural reforms of institutions—reforms that will take years to achieve and bear fruit—can become a futile exercise. Any vision of 'the future' should not be at the expense of present-day realities.

60 International interest in investing to contain outbreaks with pandemic potential within the borders of nation states where they occur should not be the only guiding force for response. The current system needs to be reviewed and reformed to respond to the local needs of populations affected by epidemics, even those epidemics that do not pose an international threat. Chen and Takemi (2015) expressed it succinctly when they write, 'what makes Ebola different from the many other epidemics is the fear of contagion that the lethal disease has precipitated among the public, especially in rich countries. When the rich and powerful feel threatened, global political priorities are accordingly redirected'. Many epidemics will never lead to the rich and powerful feeling threatened, and as a result, people will continue to suffer. Let us not wait for a new wake-up call. Today we need to prioritise the response to epidemics in a way that ensures adapted and rapid mechanisms of identification and response to outbreaks, of whatever size.

61 Unless surveillance, alert and response are guaranteed at a micro-level, the world will never have a functional global warning and response system for epidemics or

pandemics. Continued weaknesses in local and national outbreak response could result in the collapse of the global system. Imagine for one moment that Ebola had been an air-transmissible pathogen that was highly infectious during the incubation period. In this scenario, the local failures in outbreak response would have had a massive impact worldwide, as even highly performing health systems would have struggled to cope with hundreds or thousands of cases that ensued. This is a risk we cannot afford to take.

Comments by Ilona Kickbusch | Ebola 2014/15—Why the International Health Regulations Are Critical

1. Introduction

62 The paper by Monica Rull is a very balanced piece on systems failings in relation to Ebola. No one organisation can be faulted; no magic bullet exists. We must try to use the 'cosmopolitan moment' and the policy space that has emerged through the Ebola Crisis to improve the system. This was also very much the approach taken by the WHO Interim Assessment Panel on Ebola on which I served. In that capacity I had the opportunity to participate in many meetings at which the response to Ebola was discussed. Based on these experiences, I want to share some of my personal thoughts on the relevance of the International Health Regulations—and what might be done to strengthen them. I hope this indicates some routes that could be taken in relation to some of the system weaknesses that Monica Rull identifies.

63 From the very beginning each global health crisis must be recognised in its societal, political and economic dimensions. These must be understood and managed. Global health security is no longer an issue of North and South—of charity or self interest, but rather one of common danger, while recognising that some regions of the world have a much higher vulnerability than others due to history, geopolitics and ecological developments. The most recent Ebola outbreak has shown again that all countries (at all levels from local to national) and the international community must be better prepared for outbreaks with very different characteristics.

64 Contrary to Monica Rull I am in favour of the term 'global health security'. It is my opinion that we must overcome a narrow understanding of global health security as the securitization of public health and begin to frame it in the context of human security, human rights, solidarity and social protection. Global health security is about saving lives and addressing the unacceptable health inequalities that expose some countries to health crisis more than others.

2. The International Health Regulations (IHR)

65 We live in a global-risk society—with the International Health Regulations (IHR) the world has a unique, legally binding governance mechanism that aims to protect all countries, especially the most vulnerable, from cross-border public health threats when they occur. It is an instrument of global solidarity to protect all. This is not yet fully understood, therefore a political climate that supports the investment of resources in IHR capacities in all countries must be created and maintained—none can be excluded; free-riders cannot be accepted. Health events must be taken more

seriously both because people have a human right to health and because of the potential of health events to cause crises in other sectors and throughout society. Such recognition emerged after the Ebola Crisis but could disappear quickly as the next crisis —in another sector—arrives.

66 The experience with each new outbreak allows for the improvement of the instruments and mechanisms at hand and these will in turn require quite different lead actors to orchestrate the response. For example, the revised International Health Regulations were adopted under the strong impression of an airborne outbreak—SARS. Ebola was the first Public Health Emergency of International Concern (PHEIC) in resource-poor settings that required the significant involvement of humanitarian actors, led to the involvement of political bodies such as the African Union and initiated a new type of United Nations involvement—the first ever UN health mission, UNMEER. The Ebola experience has now initiated a review of the International Health Regulations—possibly new regimes and new approaches will be added to the existing instruments.

3. The Basics

67 The International Health Regulations (IHR) are about preventing the international spread of diseases. All countries agreed to put in place mechanisms to—in a timely manner—detect, assess, notify and report events and respond to public health risks so that a public health emergency of international concern (PHEIC) could be avoided. Ebola has highlighted again just how vulnerable countries with very weak health systems are—any outbreak also endangers treatment for many other health conditions, and the numbers of deaths of the poorest multiply. For all to be safe we need to invest in the weakest link and in the health of the most vulnerable—the motivation to do so will always be a mixture of humanitarian, human rights, security and health-based arguments.

68 The Sustainable Development Goals have provided a new road map for the integrated investment that will be required—much of which will not be in the health sector. Yet Ebola has also shown that even the most advanced economies and health systems are not sufficiently prepared for outbreaks—neither to contribute to international surge capacity nor to provide full security ‘at home’. Necessary supportive mechanisms are bound together in a system of interdependence between the Global North and the Global South, between preparedness and response as well as treatment and care, and between different governance levels and many different sectors. No outbreak can be handled by the health sector alone.

69 A number of assessment panels have been established to make recommendations in the aftermath of Ebola. The first was the Ebola Interim Assessment Panel established by the Executive Board of the World Health Organisation; it delivered its report in July 2015. Other panels include the Independent Panel on the Global Response to Ebola convened by the London School of Hygiene & Tropical Medicine and the Harvard Global Health Institute and a high-level United Nations panel on the Global Response to Health Crises —both will report at the end of 2016. Finally, the US National Academy of Medicine will serve as the secretariat for an international, independent, multi-stakeholder expert commission to create a global health risk framework for the future. The commission will conduct a study and prepare a report in which it will recommend an effective global architecture for recognising and mitigating the threat of infectious disease

epidemics. Finally the WHO has established a Review Committee on the Role of the International Health Regulations in the Ebola Outbreak and Response.

70 Even though the final reports are not yet available the discussions between these panels show that there is consensus on a number of basic points—

1. **Institutions matter:** investments in universal health coverage and in the IHR are critical.
2. **Integration matters:** health system preparedness has two dimensions—a functioning health system accessible to all and a public health infrastructure that includes the capacities required under the IHR; too frequently they have not been seen as ONE agenda.
3. **Other sectors matter:** both preparedness and response require action far beyond the health sector, including other ministries, the private sector, NGOs and humanitarian actors—as well as the security sector.
4. **Human rights matter:** the best basis for health security is human security and social protection.
5. **The UN matters:** the United Nations system is critical but needs to be much better prepared and better financed to act effectively in global health crises. Cooperation—between the UN, civil society, humanitarian actors and the private sector, and in some cases the security sector—is critical.

71 The Ebola Crisis has laid bare some of the weaknesses in systems as they stand presently, including a weak World Health Organisation, a lack of highest level political commitment (national actors, regional bodies, political clubs, UNSC) and a lack of transparency, information sharing and accountability within and between countries. Countries often lack supportive legal frameworks and mechanisms to deal with health crises and at the national, regional and the global level there is a lack of surge capacity. There is a consistent call for well-coordinated partnerships and the breaking down of silos and of course for financial mechanisms to ensure rapid emergency response. All of these stand or fall with the willingness to invest in health and its determinants.

4. Recognition of the Relevance of the IHR

72 The UN and WHO must send a clear message on the relevance of the IHR. This has been severely neglected because the IHR were/are seen by many as a tool of the health sector only and global health advocacy groups have not been committed to IHR implementation. BUT viruses cross borders. They can affect everybody. They can weaken communities, destroy the social fabric and destabilise countries. They can severely impact economy and trade, and can impact on the relationships between countries and peoples. As a consequence a very wide range of actors has to understand the high relevance of the IHR and the consequences of non-compliance.

73 This is not a negligible issue: countries both rich and poor will have to deal with outbreaks on a regular basis—be they in the local hospital, regional, national, cross-border or global. Societies as a whole must be better prepared and better understand the nature of outbreaks. Trust building is critical both to counteracting unnecessary fear and to securing compliance from the community in the case of an outbreak. The relevance of the IHR must be systematically communicated to and understood by heads of state and government and political leaders including regional organisations and political clubs: UNSC, UNGA and UNSG, as well as most UN agencies, ministers of health and leaders of health organisations, development agencies, humanitarian

organisations, NGOs and major foundations, the security and the foreign policy sectors, business leaders and development banks, and the media and the general public.

5. The Need for Integrated Financing Mechanisms

74 As many countries do not have the resources to fulfil their IHR obligations, financial mechanisms need to be established to support them. The IHR should be considered a global public good that benefits all, and funding mechanisms should be shared between countries and other actors as the production of global public goods benefits both the public and the private sector. The Global Health Security Agenda (GHSA) is a step in the right direction of mutual support between countries, providing financial resources but also sharing expertise. Countries should see this kind of investment in preparedness as their 'insurance policy' in a global-risk society. No country will be able to protect itself on its own through national security mechanisms.

75 But the potential impact of the next outbreak should lead to the consideration of a reliable global financing mechanism—beyond overseas development assistance—that allows resource-poor countries to access funds in recognition of their political commitment to IHR at home. While such a mechanism is being discussed, in relation to the risks posed by outbreaks, by the WHO and the World Bank—the Pandemic Emergency Financing Facility—the financing gap with regards to ensuring preparedness and fulfilling IHR obligations remains. This must be addressed at high-level donor meetings, in the context of the UN General Assembly, G7 and G20 meetings and South-South initiatives, at BRICS meetings and by regional bodies such as the African Union. The private sector can play an important role here as it is also severely affected by outbreaks, as SARS and Ebola clearly showed. Airlines, tourism and the banking industry are each a case in point.

76 The need for a new financing mechanism also applies to the financing of the research required on neglected tropical diseases, diagnostics, vaccines, treatments, technologies, etc. Working groups are meeting to discuss this and present proposals. For example a WHO blueprint for research and development is under way, which will also address issues that hampered the Ebola effort such as ownership of samples and results during an outbreak, rules for clinical trials, etc. A supportive environment for research during an outbreak—led by clear rules and ethics—is essential.

6. Political Accountability for Preparedness

77 Governments have a responsibility towards their own populations, the global community at large and the most vulnerable. The treaty nature of the IHR must be recognised and understood as a policy mechanism of interdependence by all actors. Preparedness has been seen very technically in the context of a public health response rather than as whole-of-government and whole-of-society preparedness to deal with infectious disease outbreaks and threats in the twenty-first century. Politicians, the media, a wide range of societal actors and the general public need to understand the mechanisms at work, how well their country (together with others and compared to others) is prepared, and who is responsible for acting should an outbreak occur and who can, thus, be held accountable. The same applies to regional bodies and organisations.

78 With the signing of the revised International Health Regulations (IHR) the member states of the WHO committed to global cooperation, transparency, compliance and accountability. Compliance with the IHR has not been a high political priority for countries, nor has any lack of compliance been visible or the subject of a critique, beyond that of health experts. This must change—as with other international treaties there need to be reliable independent assessments. The GHSA has moved in a good direction to work with a peer review approach. Regional centres for disease control can provide valuable support where national capacity is still weak or countries are too small to maintain certain response mechanisms. But this is not enough. The WHO Interim Panel has proposed an annual Global Health Security Report as an approach to creating more transparency and accountability. Such an independent reporting structure on global health security could possibly be established by the UN Secretary General.

79 Because of the treaty nature of the IHR and because of the global consequences of non-compliance, such an inter-sectoral report would need to reach far beyond the health sector—providing data on the global health security situation and the state of preparedness, and giving examples of successful responses to outbreaks and updates on significant research and the like. It should also include the identification of areas at risk. For example, it would report not only on health systems, but on the preparedness of the airline industry, of the tourism sector or of border security. Such a report aimed at the wider international community would also contribute to a better understanding of the many different actors involved in ensuring global health security through regular assessments of their respective contributions.

7. Incentives Must Be Created and Accountability Must Be Ensured

80 With the signing of the revised International Health Regulations all countries agreed to report events of international public health importance. This is an act of international solidarity, which countries must undertake and in relation to which they must not be penalised but rather supported. The IHR require of countries that they put global health security for all—a global public good—above short-term national interests. It must be accepted that this is more difficult for some countries than others. Therefore a system of incentives must be developed to establish IHR compliance in all four dimensions: detect, assess, report and respond. Political and financial support in particular must be made available rapidly so that countries do not shy away from reporting events.

81 The inter-sectoral nature of preparedness and response has been made very clear by the Ebola outbreak. In consequence, opportunities for regular exchange need to be put in place between the WHO and a wide range of other agencies if all those concerned are to better understand the nature of health crises and emergencies and be better aware of the tasks and potential of the other actors involved. Many existing cooperation arrangements can be used for this. In the Ebola crisis it was the humanitarian system, but depending on the nature of the health crisis this can change. Regular discussions between, and joint simulations carried out by, agencies can be helpful, health security can be on the agenda of other agencies and they—including NGOs, civil society actors and the media—must be better aware of what the WHO's role and responsibilities are. This can help to avoid misunderstandings.

82 Often, political and economic interests might caution against reporting—therefore incentive mechanisms need to be introduced to help ensure transparency. Countries must not pay a price for acting responsibly; rather their reporting activities must trigger both finances AND a reliable support system. These measures can include: a rapid assessment of needs—carried out jointly with the country concerned, a rapid response force being made available, financial support being made accessible for operations as well as for treatment, equipment, etc., and a rapid communication effort being made both with communities and the global media. The WHO's role in the sharing of information under the IHR requires more clarification—its authority to do so must be clearly underlined and global norms must be established in view of global risks. In the same spirit countries should refrain from introducing additional measures that are not justified by the IHR. Free-riding should be reduced to the minimum—egotistic behaviour should be made public. While it is recognised that there are many different reasons for introducing such measures, both political and economic, it is also recognised that calling countries to account will be essential.

83 Since this is a difficult role for the WHO in the aftermath of a crisis there needs to be an independent analysis of such measures—including travel and trade restrictions—and their impact, possibly in the context of the annual Global Health Security report mentioned above. In the spirit of transparency, countries and other actors can respond to this assessment and explain their actions. While it will be difficult to implement sanctions in the present system, inappropriate or unjustified actions must be made public. In cases where significant trade impact is likely, it might be possible to take the issue to the WTO dispute panel. Should the actions of the country—or other actors, such as airlines—be proved to have hampered or threatened the response capacity of the international community (for example by making it difficult for health workers to reach the affected areas) it should possibly be taken to the UNSC.

8. IHR Clarity of Procedures and the Declaration of a PHEIC

84 The exact authority of the WHO and the procedures and resources in place in relation to the IHR are not spelled out clearly enough. Many countries do not know or understand them. This must be addressed in a serious fashion. It must be made clear to all actors—especially outside Ministries of Health—where the WHO's responsibility lies, what it is tasked to do and what resources are available to do it. The WHO must report regularly on its capacities, at all levels of the organisation, to its member states and the international community at large.

85 Much has been made of the declaration of a PHEIC. But, at present, the declaration of a PHEIC is no more than a strong call to action. It does NOT, at this point, allow the WHO or other actors to access the resources—financial, political and operational—that come with such a declaration. This must change. It must be clearly mapped out what is triggered when a PHEIC is declared—that is to say, a meeting involving the UN Security Council and the heads of state of the countries concerned, that the countries and organisations concerned gain access to resources (financial, people, equipment, etc.), and rapid preparedness in all countries. Surge capacity must be ensured at the national and the international level. A PHEIC could, for example, trigger a global coordination mechanism jointly chaired by the SG and the DG of the WHO.

86 The declaration of a PHEIC is a measure of last resort. This is why it has been suggested by the WHO Interim Panel that an intermediate level of warning be introduced that would rapidly free up the resources required to keep an outbreak under control. Financial mechanisms must be available to contain public health threats where they are occurring, before it is necessary to declare a PHEIC. In some cases, if a country has neither the capacity nor the will to address an outbreak that has the potential of becoming a PHEIC, political legitimacy must enable mandatory action to be taken, possibly approved by the UNSC. Formal evaluations of the response must take place at all levels and be made available in the spirit of global solidarity and transparency.

87 Functioning structures at a country level are the cornerstone of the IHR. Together with other partners—such as the GHSA—the WHO must support countries in ensuring preparedness. This must become a key function of WHO country offices. The head of each WHO country office must be in regular contact with the country IHR focal point to regularly assess IHR capacity. This also includes an assessment of domestic civilian and security actors. Outbreaks and crises must be anticipated—countries must look critically at methods of coordination and at command and control structures. Based on such assessments, a significant capacity-building and training effort will be required.

9. In Summary

88 Countries must be supported to create whole-of-government agencies or platforms that break down programmatic silos of health, science and security actors. Countries could begin to produce regular national health security reports as the nature of the threat changes. In particular, the role of the security sector and its assets (including local police, border guards, logistics, etc.) must be assessed and guidelines provided. It is important to note here that each IHR national focal point should be understood as a supportive structure, not as one individual.

89 The WHO should also encourage cooperation between, and the running of combined simulations by, neighbouring countries in order to implement IHR requirements—especially in relation to border areas and ‘border spaces’. Countries with key airline hubs, ports, etc. have special responsibilities and must be supported in keeping them functioning and in responding appropriately. Cooperation with major airlines is of the essence. To support countries, the WHO must provide guidelines for national preparedness and response plans, both based on a whole-of-society and whole-of-government response. It must also relate to countries what specific profile is required of the IHR counterpart and how to conduct outbreak response simulations at different levels of governance.

90 The more countries, sectors and agencies are willing to cooperate in terms of preparedness and response, the closer we are to global health security for all. Cooperation between developed and developing countries has already been highlighted above—all will need to be better prepared and all have something to learn from the others. Cooperation builds trust, and this is probably the most important asset in the face of an outbreak. The first step is to make the implementation of the IHR a political priority.

Comments by Helen Lauer | Ebola 2014/15 - Questions About Global Attention to Africa's Chronic Contagions

91 Monica Rull is commendably concerned about the inequities in the global health arena with regard to addressing "vaccine preventable diseases" [28][12]—viz. unless these are presented as immanent threats to affluent populations in G-8 countries, they are largely ignored. But two pressing questions arise from this article and Ilona Kickbusch's erudite reply: (Q1) Does anybody know with reasonable certainty which of the chronically fatal diseases are in fact vaccine-preventable in the ambient conditions plaguing the world's poorest populations? And (Q2) are African countries really better off when a public health crisis they face is publicized and addressed as a global health threat? For instance, with regard to (Q1), although it is clear that the rotavirus is causally responsible for vast numbers of infant and toddler deaths worldwide, it is by no means clear that universal vaccination is the most effective front line response to the acute gastro-enteritis endemic throughout those regions of the world where public health is chronically neglected.

1. Long *versus* short term: a false dichotomy for addressing epidemics in Africa

92 According to Christian Fiala PhD, Doctor of Medicine (an OB/GYN specialist based in Vienna, whose experience spans several decades as a General Practitioner in Tanzanian and Ugandan field clinics and public hospitals): there is no need for a diarrhoea vaccine in Africa; rather, what is needed with unequivocal urgency is safe drinking water. So too in West Africa, according to the progressive public health expert, Phyllis Mary Antwi PhD (who has formerly worked with the Ghana Ministry of Health and taught at the University of Ghana School of Public Health, and is now Honorary Secretary of the Faculty of Public Health in the Ghana College of Doctors and Surgeons). Such is the case in Ghana: apart from the fact that no single cholera or diarrhoea vaccine shot will last a lifetime, channelling billions of research dollars into the discovery and delivery of affordable, mass marketable vaccines severely impedes both short and long term solutions to chronic water-borne contagions including cholera.

93 As both Monica Rull and Ilona Kickbusch stress [20, 59, 63], productively tackling Africa's dire public health challenges requires context-sensitive information specific to concrete situations. So to continue with Ghana's deeply rooted sanitation crisis: this dates back at least to the 1880s, when the British Gold Coast was the only colony in West Africa without any drainage systems whatsoever (Addae, 1996, 79, 392, 480). Effective health care delivery long term, and to save infant and toddlers' lives immediately, requires a root and branch reaction to the endemic faecal contamination of drinking water, by generalizing piped water into all homes, enforcing those construction code statutes that already exist to ensure universal availability of residential toilets, investing in municipal sewerage, drainage and sanitation systems, and otherwise eradicating the dangers of rampant open defecation whereby faecal matter seeps into streams through rain run-off every wet season. Rolling out a national cholera or diarrhoea vaccination programme is likely to defeat fiscal support for any immediate or comprehensive solution to the pandemic crisis of water-borne fatalities due to infected public water supplies. Rull herself points out [55] that gut-related

epidemics are likely to worsen dramatically in the next generation, with rising sea levels and global temperatures forcing mass migrations of flood and drought refugees to overwhelm the already disintegrated infrastructures and economies of coastal cities throughout the tropics.[13] In Ghana this requires addressing the huge disparity between social services available in the northern and coastal regions.[14] Today the rate of infant mortality remains about twice as great in Ghana's three Northern Regions as the national average, and well over three times that of the Greater Accra Region, locus of the nation's highest condensation of wealth. As Rull and Kickbusch observe [11, 59, 63], without diligent efforts to address causal factors related to the historical, political and economic circumstances underlying chronic contagions, egregious domestic inequities get reproduced by global interventions. For instance, it was in accord with the new 1994 Health Reform Act, when the Ghana Ministry of Health shifted its agenda from community outreach and preventive health care delivery to comply with international conventions by hosting the Expanded Programme of Immunisation (EPI). The scheme failed to meet its initial goal of immunizing 80 per cent of the child population. And as each year new children are born, as of July 2004 only 69 per cent of all children were fully immunised (Ghana Statistical Service et al., 2004). The rest of the children remained as vulnerable to disease outbreaks as if no immunity technology had been brought in.

94 Of course, as Rull is keenly aware and mentions at length, universal coverage throughout a population has been the greatest challenge of EPI since its inception around the world [30, 31, 41, 43, 44]. But the problem with EPI in Ghana was not the government's lack of cooperation or failing to prioritise children's health; budget allowances for health care were increased from 26 per cent of total expenditures at the district level in 1996 to 60 per cent in 1998 (UNICEF, 2000). Rather, the problem was the lock step compliance with an international public health agenda, implementing policies that had never engaged the district level health officers or community health practitioners at the planning stages. Overall, EPI efficiency and effectiveness in Ghana was severely hampered because global health intervention protocols did not reflect priorities set by locally based African expertise and experience. Community representatives were consulted to participate only in follow-up studies, to help with measurable, albeit short-term, snapshots of the programme's impact. Local medical officials around the country lamented EPI from the start. But to comply with global vaccination initiatives, Ghana's Ministry of Health revamped locally conceived policies that were oriented successfully toward preventive care, community outreach and family support—shifting primary health care instead to foreign-directed, technology-intensive immunisation schemes and centralized hospital-based service provision. Ghana's engagement with EPI entailed losing health care personnel to conduct the mass inoculation exercises; it meant dissolving growth monitoring of infants, and abandoning home visits by nurses for lack of time between inoculation cycles; mothers were no longer advised by health care practitioners of any basis for bringing their children under five to clinics; thus primary care for mother and child declined. Child health and life expectancy deteriorated measurably and abruptly (UNICEF, 2000; UNDP, 2000; Ghana Statistical Service et al., 2004). The problem lay in abandoning strategies that were working in order to prioritise foreign donor-driven directives.

95 Of course this is not to suggest that vaccines are unimportant. But if locally based specialists had more of a direct say in defining what is wrong, and if there were more bottom-up control over what is done to fix it, then the overall yield from the billions of

dollars invested by foreign governments and private donors would likely be a more germane, more varied, and a more effective response both in the short and long term to specific regional contagions and consequent short life expectancies.

96 Yet both Rull and Kickbusch urge that the way forward is to secure more—not less—top-down engagement with outside agents [28, 33, 56, 68, 74, 75, 80, 82, 83]. Both regard the root problems in establishing health security worldwide and locally as embedded in the attitudes of African governments and ailing populations, i.e. a pervasive disrespect for rule of law, inadequate "compliance" and "cooperation" with international initiatives [73, 78, 89, 90].

2. Command, control, compliance and cooperation

97 Prof. Kickbusch especially emphasises the need to establish trust among the partners engaged in global health security, and notes that a source of inefficiency in implementing IHR and emergency response is the absence of legal statutes [71]. So where legal statutes and political will for their enforcement do exist, why is it the case that global institutions dismiss regulations and cut corners, displaying a vigilante recklessness in their zeal to protect and cure? A glaring incident occurred in Ghana beginning in May 2015, well after the regional Ebola crisis in other countries was declared over. Because Ghana was fitted with three centres for malaria trials and the population was Ebola-free, its bid was accepted to take part in the Phase II of an Ebola vaccine trial, run by GlaxoSmithKline (GSK) and the US National Institutes of Health (NIH), backed by the World Health Organisation (WHO). The trial commenced apparently without the informed consent of participants, and without receiving the statutory required approval of Ghana's Food and Drug Authority. A heated public outcry ensued, and an esteemed independent scientific committee was established to pursue concerns based on previous evidence of problems with the chimpanzee adenovirus type 3 (ChAd3) methodology (Quershi et al., 2014; Thaci et al., 2011; Ghana Academy of Arts and Sciences, 2015; see also Ghana News, 2015). Subsequently GSK and NIH withdrew their trial programme from Ghana—not because of legal obligations but because in the interim they had gathered the requisite 30,000 samples to complete their Phase II Trials using other West African countries.

98 This incident of blatant disregard in the global arena for local African authority and rule of law is not an isolated case. The Deputy Minister of Health in Liberia disclosed early in October 2014 to the *BBC World Service* reporting from Monrovia that the highest echelons in their Ministry had neither requested intervention nor received prior knowledge of the purpose or medical capacities of three thousand US military personnel deployed to Liberia in October 2014 by directive of the US President. Health care—be it emergency or systemic—provided through foreign authority backed by force rather than by evidence-based best practice, has proven to be far from efficient or productive. Violent force was authorized throughout 2014 to quell both public and professional resistance to the invasive search and seizure activities under the aegis of the UN coordinated Ebola crisis response in Liberia, which was overseen not by medically trained practitioners but by non-medical military personnel from China, the US Army, and the UK Royal Air Force (BBC, 2014a; 2014b; 2015).

3. Perpetuating African dependency upon foreign expertise

99 Rull and Kickbusch both detail the problems incurred in the handling of an outbreak when supplies are delayed, when stockpiles are miscalculated, and where foreign experts are deterred while waiting for authorisation and visa clearances to travel across borders [21, 30, 31, 41, 43-45, 49, 53-55]. This provokes a fundamental question repeated by top level immunologists and epidemiologists in West Africa—before, during, and since the 2014 Ebola outbreak: why is there no grade P5 laboratory in the Economic Community of West African States (ECOWAS) region? It is commonplace that only a laboratory and a repository with maximal capabilities can maintain serum from recent and local survivors to develop maximally effective vaccines in the shortest possible time. The most advanced facility in West Africa is the grade P3 laboratory maintained in Ghana's Noguchi Memorial Institute for Medical Research (NMIMR)—but this is suitable only for packing and sending samples away for further research and development overseas.[15] Consequently the emergency demand for more expensive and less efficient foreign intervention is perpetuated.

100 Why is research and development of 'essential medicines' for Africans always conducted at great distances? What sustains the erroneous assumption that in the domains of immunology and epidemiology, Africans require *foreign* technical initiative and expertise to command and control epidemic management? This, despite the demographic that nearly 80 per cent of imported medical personnel in the UK and USA since 2000 derives from specialists trained in Ethiopia, Ghana, Kenya, Nigeria, and South Africa (Akosa, 2013).[16] Why is 90 per cent of global funding allocated to non-African research institutes where work is focused on just 10 per cent of the world's diseases; while roughly 90 per cent of the world's diseases afflict populations in Africa?

4. Dubious diagnostics and misleading statistics

101 Even more disconcerting than the global inequities in fiscal resource allocation, and the disregard for local African authority and rule of law from the global health community, is the high tolerance for error and shortfalls in the rudiments of evidence-based hypothesis and policy formation when the focus is on developing medical treatments for virulent tropical diseases. The fact sheets and news releases produced about West Africa by the US Centres for Disease Control and the World Health Organisation have been anarchic over 2014-16. Flimsy methods of accumulating Ebola cases and related deaths have always been masked by figures carrying apparent exactitude; including the WHO statistics quoted by Rull [16]. After substituting the vague term "outbreak" for "epidemic" (which has an operational meaning) in news releases to AP and Reuters as of mid-October 2014, the WHO's and the US CDC's figures for cases of Ebola until March 2015 abruptly acquired a level of pseudo-precision; for instance, 3,769 cases were reported in Liberia for one week in early October, changing with seemingly assiduous rigour each week. Yet when queried, neither the CDC nor the WHO provided any statistics about how many Ebola-related deaths were under twelve years old, how many were men, or how many died the same week of malaria, or of diabetic shock or gastro enteritis or of malnutrition related diseases or upper respiratory infections including tuberculosis—all of whose symptoms are indiscernible from those identified most recently with the Ebola Virus Disease. By 16 October, 2014, just prior to the US troop deployment to Liberia, the WHO predicted that by the end of 2014 the number of new

Ebola cases could reach 5,000 to 10,000 per week (according to Anthony Banbury, the US State Department Ebola Coordinator and then Head of the UN Mission for Ebola Emergency Response (UNMEER) (BBC, 2014a). On 14 December, 2014 the number of people in Sierra Leone with Ebola was reported to be 8,000 since the beginning of the outbreak; 1,900 of these were reported to have been fatal. James Gallagher, global health correspondent for the BBC, reported that a half a million cases were the lower end of probability for Liberia, with cases doubling every 15 to 20 days (BBC, 2014b). But these figures were bizarrely out of synch with figures reported only five days before. The CDC publicized alarmist predictions that by late January 2015 there would be almost 1.4 million cases of Ebola throughout West Africa. When these estimates prove erroneous, there is no apparent retraction or concern. Yet without a comprehensive, credible and accountable picture, there is really no way to assess the main causes of death in Guinea, Liberia or Sierra Leone over the eighteen-month segment of an on-going crisis sectioned off for global media attention in 2014-15.

102 The papers published in *The Lancet* originally purporting the presence of Ebola in humans in Zaire (Bowen et al., 1977; Johnson et al., 1977; Pattyn et al., 1977) and later in the Central African Republic (Johnson et al., 1993) have attracted criticism regarding the handling of specimens, insufficiency of sample sizes, and poor quality of the electro-microscopy.[17] It remains unclear what, if any, connection the Ebola featured in these studies has to the Ebola as diagnosed in 2014, for which one survey of forty four cases in Sierra Leone, showed only one patient with haemorrhagic symptoms (Schieffelin et al., 2014).

103 Even after the declared completion of the outbreak in January 2015, WHO conceded they were still searching for a reliable test to detect Ebola. A recent three-year study in Gabon involving nearly 5,000 healthy individuals (Becquart et al., 2010) established the utter unreliability of the tests used nevertheless throughout the 2014-15 outbreak in West Africa. Tens of thousands of people in Guinea failed to receive malaria treatment because of capricious, *ad hoc* diagnoses of Ebola based on sheer location (Boseley, 2015). To avoid such undermining effects on primary health care delivery, Ebola tests would never be administered in the United States until typhoid, diabetic shock, and malaria had been definitely ruled out. But in West Africa typhoid and malaria are endemic—hence the 'crisis' continues anonymously. A further source of mayhem and distrust in Guinea was caused in October 2014 by the US CDC's failure to report a botched meningitis vaccine campaign which resulted in an outbreak of acute fulminating Mingococcal Septicemia, due to use of overheated vials.[18] Since the CDC's error went unpublicized, the violent symptoms were alleged to be caused by Ebola. Such avoidable, detrimental effects resulting from mismanagement by foreign agencies would never be tolerated in a G-8 country without a major political and diplomatic meltdown.

104 Lest there be any doubt about the accountability or qualifications of the international agents participating in this high profile global emergency operation—against a singularly ubiquitous pathogen whose very identification and location remained elusive from the very beginning to the very end of the rescue mission—here is a list of the partners who convened on 12 December, 2014, in response to the World Health Organisation's call for "Ebola diagnostics [since] the efforts to contain the Ebola outbreaks in West Africa [were] hampered by cumbersome, slow, complex and costly diagnostic tests": Médecins Sans Frontières (MSF) Executive Director of their Access Campaign, as well as the Director and Epidemiologist-Clinical Biologist of the Epicentre

MSF in Paris, the MSF Diagnostics Advisor based in Geneva, both the Leader and the Laboratory Advisor of the MSF Diagnostic Network based in Amsterdam, the Chief Scientific Officer, the CEO, and the Chairman of the Board of the Foundation for Innovative New Diagnostics (FIND), the Medical Director of Fondation Mérieux, the Public Health Focal Point representative of the World Bank, a representative of the US Naval Medical Research Center, the Chief of the Research Department in Guinea's Ministry of Health, a member of staff from the Infectious and Tropical Diseases Department of the National Hospital in Conakry, the National Case Management Chair of Ebola Response of Liberia's Ministry of Health and Social Welfare, the WHO representative in Liberia, the Senior Program Officer of Diagnostics of the Bill and Melinda Gates Foundation, the Senior Health Advisor of the Swiss Agency for Development and Cooperation in Bern, US Federal Drug Administration (FDA), the Head of Blood and Tissue Pathogens, the Director of Critical Reagents Program and Medical Countermeasure Systems of the US Department of Defense, Adventitious Agents and Diagnostics in the Division of Virology of the UK National Institute for Biological Standards and Control (NIBSC), the Director of the Office of Genomics and Advanced Technologies of the Division of Microbiology and Infectious Diseases of the US National Institutes of Health (NIH)/National Institutes of Allergies and Infectious Diseases (NIAID)/Department of Health and Human Services (DHHS) in Bethesda Maryland, the US Center for Devices and Radiological Health (CDRH), the Chief of the Diagnostic Systems Division of the US Army Medical Research Institute for Infectious Diseases (AMRIID), the Team Leader of Molecular and Immunodiagnostics of the National Center for Emerging and Zoonotic Infectious Diseases of the US Centers for Disease Control and Prevention (CDC), the Senior Advisor for Global Affairs of Institut Pasteur in Paris, the Coordinator of the Arbovirus Unit and Virus Haemorrhagic Fevers Unit of the Institut Pasteur in Dakar, the Senior Health Specialist of UNICEF, and the Head of Diagnostics and Therapeutics of the Public Health Agency of Canada, all met with the WHO Assistant Director-General of Health Systems and Innovation, the WHO Assistant Director-General of Polio and Emergencies, the WHO's Team Leader of the Laboratory Strengthening and Biorisk Management, representatives of the WHO Department of Essential Medicines and Health Products and of the WHO Global Malaria Programme, the Programme Manager of the WHO Regional Office for Europe in Copenhagen, the WHO Director of Collaborating Centre for Viral Haemorrhagic Fevers within the US Centers for Disease Control and Prevention (CDC), the WHO's Senior Manager with technical expertise in Diagnostics, among others (WHO, 2014).[19]

105 In light of such a cavalry of high profile expertise, the pervasively arbitrary statistics, the haphazard data collection and inadequate means of diagnosis which were tolerated throughout the 2014 global response to 'Ebola' in West Africa is nothing short of astonishing. But such cavalier disregard for scientific rigour in the global health arena is not restricted to causal hypotheses concerning African morbidity and mortality. Consider the most recent 'outbreak' of Zika virus in South America and the global alarm raised by repetitive association—without isolating and demonstrating any causal relation—to microcephaly. The Argentinian medical group, Physicians in the Crop-Sprayed Towns, recently issued a report based on evidence suggesting that *pyriproxyfen*, a larvicide used in Brazil's drinking water since 2014 to control the *Aedes aegypti* mosquito, could be associated with brain defects that impair foetal brain development (The New Indian Express, 2016). Similarly, in the absence of any isolation of a virus in human tissue or blood associated with the symptoms called Ebola in agrarian regions of

former Zaire, Uganda, and the Congo, why is the impact of environmental toxins such as prevalent pesticide poisoning always disregarded out of hand?

106 More generally, one has to wonder: what has happened in the global health agenda to basic rudimentary respect for the rules of scientific warrant, eliminative induction, and evidence-based medical policy?

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NOTES

1. Author's notes: the opinions in this paper are my own and are not to be considered the official position of Doctors Without Borders (MSF; Médecins sans Frontières). The author would like to particularly thank Laurent Ligozat, Jean Clement Cabrol and Maude Montani for their vital contributions.

2. Epidemic' refers to an often sudden increase in the number of cases of a disease above what is normally expected in that population in that area. 'Outbreak' is similarly defined, but is often used for a more limited geographic area.

3. The scope of GAR's work encompasses avian influenza, cholera, emerging diseases (e.g. nodding disease), Hendra virus infection, influenza (seasonal and pandemic), leptospirosis, meningitis, Nipah virus infection, plague, Rift Valley fever, SARS and coronavirus infections, smallpox and human monkeypox, tularaemia, viral haemorrhagic fevers (Ebola, Marburg, Lassa, Crimean-Congo haemorrhagic fever, etc.) and yellow fever.

4. Visceral leishmaniasis is a parasitic disease. If not treated, the fatality rate in developing countries can be as high as 100 per cent within two years. MSF treated 4,611 cases in its facility in Lankien, South Sudan, in 2014 compared to 1,346 in 2013.

5. The original IHRs were endorsed in 1969.

6. See for instance: Hamer (2015); MSF (2006); Rice (2007).

7. For example, a new tool for addressing cholera epidemics now exists in the form of an oral vaccine, but unless an epidemic is declared, there will be no possibility of implementing reactive vaccination campaigns as part of other measures used to control the outbreak.

8. Mobile populations in all continents have limited access to health services or choose not to avail themselves of such services for fear of prosecution. In Indonesia, for example, millions of 'invisibles' in Djakarta alone are not registered and therefore not immunised.

9. See: Radio Dabanga (2014); Boseley (2014).

10. Clusters are groups of humanitarian organisations, both within and outside the UN system, in each of the main sectors of humanitarian action, e.g. water, health and logistics. They are designated by the Inter-Agency Standing Committee (IASC) and have clear responsibilities for coordination.

11. 'Compassionate/emergency use' is the treatment of a seriously ill patient using an unapproved test article where no other available treatments are satisfactory.

12. Throughout I use square brackets to refer to paragraphs in Monica Rull's and Ilona Kickbusch's contributions to the "Policy Debate | International responses to global epidemics: Ebola and beyond" document online URL: http://poldev.revues.org/2178, DOI 10.4000/poldev.2178. This author remains indebted to the Managing Editor Frances Victoria Rice of International Development Policy, The Graduate Institute, Geneva, for the invitation and generous support in various capacities to contribute to this forum, to my colleague Prof. Kofi Baku, Dept. of History, University of Ghana, for suggesting she do so.

13. David Kilcullen, former US State Department's Chief Strategist in the Office of the Coordinator for Counterterrorism, says rising tropical sea levels pose a greater threat to civilian safety in coastal cities than terrorist cells (BBC, 2013).

14. In 2004 Greater Accra's rate of mortality for children under five years stood at 75 out of 1,000 children under five years; in the Upper West Region, the rate is 208 for every 1,000 children in the same age group (Ghana Statistical Service, 2004).

15. For stressing this point I am indebted to Professor Isabella A. Quakyi, of the Department of Biological, Environmental & Occupational Health Sciences (and foundation Dean) of the School of Public Health, College of Health Sciences, University of Ghana, as well as to Professor Kwadwo Koram, Director of the Noguchi Memorial Institute of Medical Research, Univ. Ghana. Others making the same point include Prof. K. Ampofo, Head of Virology Dept. Noguchi Memorial Institute for Medical Research, and Dr. J.A.M. Brandful, specialist in mapping HIV genetic strain developments and former Head of Virology, NMIMR. Prof. S. Chima MD, LLM (head of the Program of Bio & Research Ethics and Medical Law, College of Health Sciences, University of KwaZulu Natal) concurs that the lack of infrastructure for vaccine research within the continent is a major shortfall in delivering both long term prophylactic care and reactive treatment for fatal contagions, participating at the workshop "Giving a Voice to African Thought in Medical Research Ethics," organized by Kevin Behrens, director of the Steve Biko Centre of Bioethics and hosted at the School of Clinical Medicine, Faculty of Health Sciences, University of Witwatersrand, Johannesburg December 3-5, 2015.

16. See (The Guardian, 2014). In the last five years the demand for African-trained expertise has increased. UK's National Health Service requested in 2014 special concessions of the UK Home Office for leniency toward immigration applicants seeking employment in the health sector.

17. I am grateful to Dr. David Rasnick, biochemist, pharmaceutical bio-technologist specialising in protease inhibitors and cancer researcher, for his evaluation and provision of his annotated copies of these published studies (Crowe, D. and E. Ely, 2015).

18. The symptoms of Mingococcal Septicemia, also called Waterhouse-Frederichsen syndrome, include vomiting, diarrhoea, extensive purpura, cyanosis, tonic-clonic convulsions, circulatory collapse, usually with haemorrhage into the adrenal glands (Investment Watch, 2014).

19. See WHO (2014) for the full list of participants of Diagnostics and Ebola Control: A Joint WHO/FIND meeting, 12 December 2014, Geneva, Switzerland.

ABSTRACTS

Editor's Note: These papers are contributions to the 'Policy Debate' section of *International Development Policy*. In this section, academics, policy-makers and practitioners engage in a dialogue on global development challenges. Papers are copy-edited but not peer-reviewed. Instead, the initial thematic contribution is followed by critical comments and reactions from scholars and/or policy-makers or practitioners. **This debate can be pursued on the Journal's blog (http://devpol.hypotheses.org/956)** where you are invited to share your reflections under your name.

The initial paper was written by Monica Rull, from Doctors Without Borders (Médécins sans Frontières) Switzerland. Monica Rull provides an in-depth and lucid examination of the collective failure to respond in a timely and efficient manner to global epidemics. Starting from the recent Ebola crisis in West Africa, the piece pinpoints a number of weaknesses in the international system in terms of the identification of, and response to, global epidemics and suggests ways to improve it.

The initial paper is followed by critical comments of two authors: Ilona Kickbusch, Director of the Global Health Programme and Adjunct Professor at the Graduate Institute of International and Development Studies, Geneva and Helen Lauer, Professor at the Department of Philosophy and Religious Studies, College of Humanities, University of Dar es Salaam.

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